

REMARKS

Applicants request favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Claims 1-20 were pending in the application and were rejected in the Office Action. By way of this amendment, Applicants have: (a) cancelled claims 2, 6, 12, and 16; and (b) amended claims 1, 3-5, 7-11, 13-15, and 17-20. Accordingly, claims 1, 3-5, 7-11, 13-15, and 17-20 are respectfully presented for further consideration.

1. Rejection of Claims 5 and 15 under 35 U.S.C. § 112

The Examiner rejected claims 5 and 15 under 35 U.S.C. § 112, ¶ 2 as allegedly being indefinite. Applicants respectfully submit that this rejection is now moot due to the amendments made herein to claims 5 and 15. Accordingly, a withdrawal of this rejection is both warranted and earnestly solicited.

2. Rejection of Claims 1-20 under 35 U.S.C. § 102

The Examiner rejected claims 1-20 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,253,137 ("Abo"). For the following reasons, Applicants respectfully traverse this rejection.

As amended, claim 1 (*i.e.*, the claim from which claims 3-5 and 7-10 depend) recites a hydraulic control system for a belt-drive continuously variable transmission (CVT) of a vehicle, the CVT including a belt. The hydraulic control system includes, among other possible things (*italic emphasis added*):

- an oil pump operative to produce an oil pressure and an oil flow amount which are supplied to the CVT;
- a pressure regulator valve operative to regulate the oil pressure produced by the oil pump;
- a belt lubricating oil supply passage for supplying oil to the belt on a downstream side of the pressure regulator valve;
- engine operating condition detecting means for detecting an engine operating condition and generating an engine operating condition signal, the engine operating condition detecting means including an oil temperature sensor operative to:
 - detect a temperature of the oil in the CVT; and
 - generate an oil temperature signal indicative of the oil temperature detected;
- an oil cooler disposed on a downstream side of the pressure regulator valve;
- a lubricating oil supply path for supplying the oil to lubrication parts in the CVT, the lubricating oil supply path being disposed on a downstream

side of the oil cooler and including the belt lubricating oil supply passage;

line pressure detecting means for:

- detecting a line pressure between the oil pump and the pressure regulator valve; and
- generating a line pressure signal indicative of the line pressure detected; and

a controller for controlling the oil flow amount based on the engine operating condition signal, which is generated based on the oil temperature signal and the line pressure signal, the controller being programmed to:

- calculate a CVT input torque based on the engine operating condition signal;
- calculate a required belt lubricating oil flow amount to be supplied to the belt on the basis of the engine operating condition signal and the CVT input torque;
- calculate a required cooler oil flow amount to be supplied to the oil cooler from the required belt lubricating oil flow amount on the basis of a predetermined oil distribution ratio of an oil flow amount to be supplied to the belt lubricating oil supply passage to an oil flow amount to be supplied to the lubricating oil supply path;*
- calculate a cooler input pressure required to supply the oil to the oil cooler on the basis of the required cooler oil flow amount;*
- determine a minimum speed of the oil pump that is required to provide the cooler input pressure, on the basis of the oil temperature signal and the line pressure signal; and*
- control the oil pump at the minimum speed.

Similarly, as amended, claim 11 (*i.e.*, the claim from which claims 13-15 and 17-20 depend) recites a method for controlling a belt-drive continuously variable transmission (CVT) of a vehicle, the CVT including a belt. The vehicle includes: (a) an oil pump operative to produce an oil pressure and an oil flow amount which are supplied to the CVT; (b) a pressure regulator valve operative to regulate the oil pressure produced by the oil pump; (c) a belt lubricating oil supply passage for supplying oil to the belt on a downstream side of the pressure regulator valve; (d) an oil cooler disposed on the downstream side of the pressure regulator valve; and (e) a lubricating oil supply path for supplying the oil to lubrication parts in the CVT, the lubricating oil supply path being disposed on a downstream side of the oil cooler and including the belt lubricating oil supply passage. The method includes, among other possible steps (*italic emphasis added*):

- generating an engine operating condition signal indicative of an engine operating condition, the engine operating condition signal being based on an oil temperature signal indicative of a temperature of the oil in the CVT and a line pressure signal indicative of a line pressure between the oil pump and the pressure regulator valve;
- calculating a CVT input torque based on the engine operating condition signal;

calculating a required belt lubricating oil flow amount to be supplied to the belt on the basis of the engine operating condition signal and the CVT input torque;
calculating a required cooler oil flow amount to be supplied to the oil cooler from the required belt lubricating oil flow amount *on the basis of a predetermined oil distribution ratio* of an oil flow amount to be supplied to the belt lubricating oil supply passage to an oil flow amount to be supplied to the lubricating oil supply path;
calculating a cooler input pressure required to supply the oil to the oil cooler *on the basis of the required cooler oil flow amount*;
determining a minimum speed of the oil pump that is required to provide the cooler input pressure, *on the basis of the oil temperature signal and the line pressure signal*; and
controlling the oil pump at the minimum speed.

As hereafter explained, Abo fails to teach or suggest either the hydraulic control system recited in claim 1 or the method for controlling a belt-drive continuously variable transmission CVT of a vehicle recited in claim 11.

Claim 1 has been amended to recite limitations previously recited in cancelled claims 2 and 6, as well as to recite additional limitations. Specifically, claim 1 recites that the controller is programmed to: (a) calculate a required cooler oil flow amount *on the basis of a predetermined oil distribution ratio* of (i) an oil flow amount to be supplied to the belt lubricating oil supply passage to (ii) an oil flow amount to be supplied to the lubricating oil supply path; (b) calculate a cooler input pressure *on the basis of the required cooler oil flow amount* (which is determined by the aforementioned ratio); and (c) determine a minimum speed of the oil pump on the basis of the *oil temperature signal and the line pressure signal*.

Similarly, claim 11 has been amended to recite limitations previously recited in cancelled claims 12 and 16, as well as to recite additional limitations. Specifically, claim 11 recites: (a) calculating a required cooler oil flow amount *on the basis of a predetermined oil distribution ratio* of: (i) an oil flow amount to be supplied to the belt lubricating oil supply passage to (ii) an oil flow amount to be supplied to the lubricating oil supply path; (b) calculating a cooler input pressure required to supply the oil to the oil cooler *on the basis of the required cooler oil flow amount* (which is determined by the aforementioned ratio); and (c) determining a minimum speed of the oil pump *on the basis of the oil temperature signal and the line pressure signal*.

In rejecting claims 1-20, the Office Action fails to cite to any portion of Abo that teaches or suggests the above-italicized limitations. This failure to cite to specific portions of Abo likely results from the fact that Abo fails to teach or suggest at least these limitations of claims 1 and 11. As Abo fails to teach or suggest each of the limitations of claims 1 and 11,

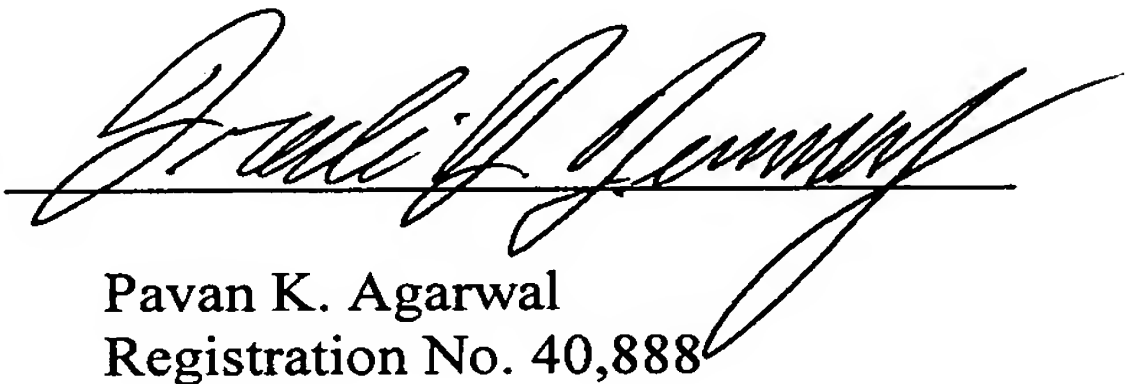
Abo can not be used to reject claims 1 and 11, or any claim dependent thereon, under 35 U.S.C. § 102(b). Moreover, as claims 3-5 and 7-10 depend from claim 1 and as claims 13-15 and 17-20 depend from claim 11, each of these dependent claims is also allowable over Abo, without regard to the other patentable limitations recited therein. Accordingly, a withdrawal of the rejection of claims 1, 3-5, 7-11, 13-15, and 17-20 is both warranted and respectfully requested.

CONCLUSION

For the aforementioned reasons, claims 1, 3-5, 7-11, 13-15, and 17-20 are now in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Respectfully submitted,

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THE COMMISSIONER IS HEREBY AUTHORIZED TO CHARGE ANY ADDITIONAL FEES WHICH MAY BE REQUIRED REGARDING THIS APPLICATION UNDER 37 C.F.R. §§ 1.16-1.17, OR CREDIT ANY OVERPAYMENT, TO DEPOSIT ACCOUNT NO. 19-0741. SHOULD NO PROPER PAYMENT BE ENCLOSED HERewith, AS BY A CHECK BEING IN THE WRONG AMOUNT, UNSIGNED, POST-DATED, OTHERWISE IMPROPER OR INFORMAL OR EVEN ENTIRELY MISSING, THE COMMISSIONER IS AUTHORIZED TO CHARGE THE UNPAID AMOUNT TO DEPOSIT ACCOUNT NO. 19-0741. IF ANY EXTENSIONS OF TIME ARE NEEDED FOR TIMELY ACCEPTANCE OF PAPERS SUBMITTED HERewith, APPLICANT HEREBY PETITIONS FOR SUCH EXTENSION UNDER 37 C.F.R. § 1.136 AND AUTHORIZES PAYMENT OF ANY SUCH EXTENSIONS FEES TO DEPOSIT ACCOUNT NO. 19-0741.

AMENDMENTS TO THE DRAWINGS

Figure 1 has been amended to: (a) replace label “MM” with “MM/AM” (*see, e.g.*, ¶¶ [0021], [0028]); and (b) add an additional label “CP” adjacent the input into the CVT control unit 9 from the pulley clamping pressure sensor 14 (*see* ¶ [0021]).